Letter to Editor

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Antibiotic Resistance in *Escherichia Coli* Strains Isolated from Urine of Inpatients and Outpatients

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The urinary tract infections regarded as a health problem around the world and not only as an agent of nosocomial infections but also infections in the community. Community acquired UTIs cause significant illness in the first 2 years of life [1]. Urinary tract infections in both inpatient and outpatient are common and widespread use of antibiotics is often the cause of emerging one or more antibiotic-resistant microorganisms [2].

Most studies have shown higher antibiotic resistance in bacterial strains isolated from hospitalized patients than outpatients. In this study, antibiogram was performed using disk diffusion susceptibility method according to NCCLS standards of the International Committee [3]. 8 different antibiotics, including ciprofloxacin (CP: 30 µg), ceftriaxone (CRO: 30 µg), cephalotin (CF: 30 µg), cefixime (CFM: 5 µg), cotrimoxazole (SXT), nalidixic acid (NA: 30 µg), nitrofurantoin (FM: 300 µg), gentamicin (GM: 10 µg) were used for antibiogram. During 1388 the total number of urine samples sent to hospital microbiology laboratories valiasr (aj) of Arak was 5156, of which 446 samples (65.8%) were positive for E. coli culture.

Among these isolates, 276 (61.9%) isolates were from outpatient and 170 isolates (39.1%) were from patients in different parts of the hospital. Low antibiotic resistance in both hospital and outpatient isolates was seen in antibiotics nitrofurantoin (respectively 16.5% and 16.3%), gentamicin (respectively 52.4% and 31.7%) and ciprofloxacin (respectively 60.1% and 34.3%). The highest antibiotic resistance in both hospital and outpatient isolates was seen in antibiotics nalidixic acid (respectively 80.2% and 63.3%), cotrimoxazole (respectively 80% and 62.7%) and cephalotin (the 78.3% and 54.3%).

E. coli strains that isolated from hospitalized patients showed significantly higher antibiotic resistance to all antibiotics except nitrofurantoin. The findings of a study conducted by Ghader and colleagues [1] in 2004 on urinary E. coli isolates have done, according to our study the least resistance to nitrofurantoin (5%), gentamicin (6%) and Ciprofloxacin (34 %) and also more resistant to cotrimoxazole (42%) existed. In another study Pieboji and colleagues [2] have done in 2004 in Cameroon, resistance to gentamicin and ciprofloxacin in E. coli isolates from hospital patients was higher than outpatient isolates, but resistant to cotrimoxazole were almost equal in both groups of isolates. In the study of Mehregan and colleagues [3] in Tehran in 2008 on urinary strains of Escherichia coli have done, as our study of least resistance to nitrofurantoin (4%) and gentamicin (48.3%) were reported, but rates of resistance to Ciprofloxacin was equal to 72.2%. These findings suggest that urinary E. coli strains have the greatest sensitivity to nitrofurantoin, gentamicin, and ciprofloxacin and these antibiotics can be helpful in treating urinary tract infections. Suggestions: Plasmid profiling, study of genes involved in resistance by PCR, Study the resistance plasmid genes, strategies to prevent the excessive use of antibiotics.

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References

1. Kader AA, Kumar A, Dass SM. Antimicrobial resistance patterns of gram-negative bacteria isolated from urine cultures at a general hospital. Saudi J Kidney Dis Transpl 2004; 15(2): 135-9.
2. Pieboji JG, Koulla-Shiro S, Ngassam P, et al. Antimicrobial resistance of Gram-negative bacilli isolates from inpatients and outpatients at Yaounde Central Hospital, Cameroon. Int J Infect Dis 2004; 8(3): 147-54.
3. Mehrgan H, Rahbar M. Prevalence of extended-spectrum beta-lactamase-producing Escherichia coli in a tertiary care hospital in Tehran, Iran. Int J Antimicrob Agents 2008; 31(2): 147-51

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